

IN THE CLAIMS:

Please write the claims as follows:

Please cancel claim 11 without prejudice.

1. (Currently Amended) A method for initiating a peer-to-peer communication ses-
2 sion, the method comprising the steps of:
3 attempting a first remote direct memory access (RDMA) read operation directed
4 to a cluster partner having an operating system, the RDMA read operation bypassing the
5 operating system;
6 performing, in response to a successful first RDMA read operation, a first RDMA
7 write operation to the cluster partner;
8 performing, in response to a successful RDMA write operation, a second RDMA
9 read operation directed to the cluster partner; and
10 performing, in response to a successful second RDMA read operation, a second
11 RDMA write operation to the cluster partner.

1 2. (Original) The method of claim 1 wherein the step of attempting a first RDMA read
2 operation further comprises the step of issuing a RDMA read operation to the cluster
3 partner requesting a pre-set memory address location that is associated with a status vari-
4 able on the cluster partner.

1 3. (Currently Amended) The method of claim 1 further comprising the steps of:
2 exchanging a set of peer connection information;
3 passing a set of client information to the cluster partner;
4 creating a set of appropriate communication ports;
5 alerting the cluster partner of a ready status; and

6 alerting a set of clients that the cluster partner is in a ready state.

1 4. (Original) The method of claim 3 wherein the set of peer connection information
2 comprises a version number.

1 5. (Currently Amended) The method of claim 1 wherein the step of passing a set of
2 client information to the cluster partner further comprises the steps of:
3 collecting, from a set of clients, the set of client information; and
4 transferring the collected set of client information to the cluster partner.

1 6. (Original) The method of claim 5 wherein the client information comprises a number
2 of communication ports required.

1 7. (Original) The method of claim 5 wherein the set of client information further com-
2 prises an amount of memory requested by a particular client.

1 8. (Original) The method of claim 1 wherein the cluster partner is a storage system.

1 9. (Original) The method of claim 1 wherein the cluster partner is an application server.

1 10.-12. (Cancelled)

1 13. (Currently Amended) A method for initiating a peer-to-peer communication ses-
2 sion, the method comprising the steps of:
3 performing a first remote direct memory access read operation directed to a clus-
4 ter partner having an operating system, the RDMA read operation bypassing the operat-
5 ing system; and
6 performing, in response to a successful first remote direct memory access read
7 operation, a first remote direct memory access write operation to the cluster partner.

1 14. (Original) The method of claim 13 wherein the first remote direct memory access
2 read operation is performed over a Virtual Interface connection having a pre-determined
3 and pre-assigned Virtual Interface Number and a pre-determined Fibre Channel ID.

1 15. (Currently Amended) A method comprising ~~the steps of:~~
2 (a) initiating a peer-to-peer communication session which bypasses an operating
3 system on a storage system by attempting a first remote direct memory access read opera-
4 tion directed to a predefined hardware address and a predefined port number, the prede-
5 fined hardware address and the predefined port number previously known to support a
6 RDMA operation; and
7 (b) performing, in response to a successful step (a), a first remote direct memory
8 access write operation directed to the predefined hardware address and the predefined
9 port number.

1 16. (Currently Amended) The method of claim 15 further comprising ~~the step of:~~
2 (c) performing, in response to a successful step (b), a second remote direct mem-
3 ory access read operation directed to the predefined hardware address and the predefined
4 port number.

1 17. (Original) The method of claim 15 wherein the predefined hardware address com-
2 prises a fibre channel identifier.

1 18. (Original) The method of claim 15 wherein the predefined port number comprises a
2 virtual interface.

1 19. (Original) The method of claim 15 wherein the first remote direct memory access is
2 delivered to a predefined memory address storing booting status information.

1 20. (Currently Amended) A system configured to establish reliable peer-to-peer
2 communication among storage systems of a clustered environment, the system comprising:
3

4 a peer process executing on each storage system partner having an operating sys-
5 tem; and

6 a cluster connection manager executing on each storage system partner, the clus-
7 ter connection manager establishing a reliable peer-to-peer connection between each peer
8 process by connecting to a predetermined port number using a predetermined network
9 address, the reliable peer-to-peer connection bypassing the operating system.

1 21. (Original) The system of claim 20 wherein the reliable peer-to-peer connection is
2 established without requiring a storage operating system executing on each storage sys-
3 tem partner to be fully functioning.

1 22. (Original) The system of claim 20 wherein the peer-to-peer connection is a virtual
2 interface connection.

1 23. (Original) The system of claim 20 wherein the peer process is a cluster connection
2 client that requests services from the cluster connection manager.

1 24. (Currently Amended) A system configured to open an initial peer-to-peer connec-
2 tion over a cluster interconnect, the system comprising:

3 a storage system having an operating system;

4 a cluster connection manager executing on the storage system, the cluster connec-
5 tion manager configured to establish a peer connection on a predetermined port number
6 and using a predetermined network address within the storage system the peer-to-peer
7 connection bypassing the operating system; and

8 a process executing on the storage system, the process configured to use the estab-
9 lished peer connection for communication.

- 1 25. (Previously Presented) The system of claim 24 wherein the peer-to-peer connec-
2 tion is a virtual interface connection.
- 1 26. (Previously Presented) The system of claim 24 wherein the process executing on
2 the storage system is a cluster connection client that requests services from the cluster
3 connection manager.
- 1 27. (Previously Presented) The system of claim 24 wherein the process executing on
2 the storage system communicates with a cluster partner using the established peer connec-
3 tion.
- 1 28. (Currently Amended) A system configured to accept the initiation of a peer-to-
2 peer connection over a cluster interconnect, the system comprising:
3 | a storage system having an operating system;
4 | a cluster connection manager executing on the storage system, the cluster connec-
5 | tion manager configured to accept a peer connection on a predetermined port number and
6 | using a predetermined network address within the storage system the peer-to-peer con-
7 | nnection bypassing the operating system; and
8 | a process executing on the storage system, the process configured to read infor-
9 | mation from the established peer connection.
- 1 29. (Previously Presented) The system of claim 28 wherein the peer-to-peer connec-
2 tion is a virtual interface connection.
- 1 30. (Previously Presented) The system of claim 28 wherein the process executing on
2 the storage system is a cluster connection client that requests services from the cluster
3 connection manager.

- 1 31. (Previously Presented) The system of claim 28 wherein the process executing on
- 2 the storage system reads information from a cluster partner.

- 1 32. (Previously Presented) The system of claim 28 wherein the information comprises
- 2 heartbeat signals.

- 1 33. (Currently Amended) A method comprising:
 - 2 initializing a first remote direct memory access (RDMA) read operation that bypasses the operation system and is directed to a specific cluster partner before a higher
 - 3 virtual interface layer has fully initialized, using a specific port number and a specific address that support a RDMA operations; and
 - 4 performing a second RDMA read operation directed to a specific cluster partner
 - 5 before a higher virtual interface layer has fully initialized, using a specific port number
 - 6 and a specific address that support a RDMA operations.

- 1 34. (Currently Amended) A system configured to accept the initiation of a peer-to-peer
- 2 connection over a cluster interconnect, the system comprising:
 - 3 a storage system having an operating system;
 - 4 a cluster connection manager executing on the storage system, the cluster connection manager configured to initialize a first remote direct memory access (RDMA) read
 - 5 operation that bypasses the operation system and is directed to a specific cluster partner
 - 6 before a higher virtual interface layer has fully initialized and use a specific port number
 - 7 and a specific address that support RDMA operations; and
 - 8 a process executing on the storage system, the process configured to use the established peer-to-peer connection for communication.

1 35. (Currently Amended) A computer readable medium for accepting the initiation of a
2 peer-to-peer connection over a cluster interconnect, the computer readable medium in-
3 cluding program instructions when executed adapted to:
4 attempting a first remote direct memory access (RDMA) read operation that by-
5 passes the operation system and is directed to a cluster partner;
6 performing, in response to a successful first RDMA read operation, a first RDMA
7 write operation to the cluster partner;
8 performing, in response to a successful RDMA write operation, a second RDMA
9 read operation directed to the cluster partner; and
10 performing, in response to a successful second RDMA read operation, a second
11 RDMA write operation to the cluster partner.